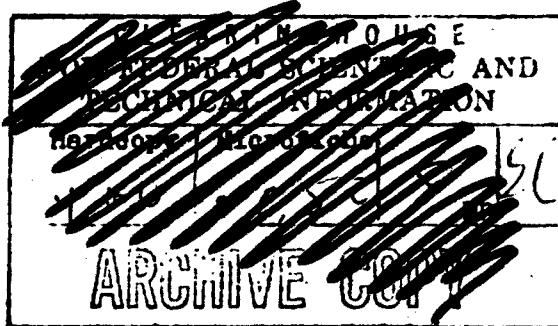


INSTRUCTION IN EPIDEMIOLOGY AT THE DONETS MEDICAL INSTITUTE

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## INSTRUCTION IN EPIDEMIOLOGY AT THE DONETS MEDICAL INSTITUTE.

[Following is the translation of an article by N. Kh. Shteynbakh, Donets Medical Institute, published in the Russian-language periodical Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii (Journal of Microbiology, Epidemiology and Immunobiology), No. 6, 1964, pages 7-12. It was submitted on 25 Dec 1963. Translation performed by Sp/7 Charles T. Ostertag Jr.]

An invitation by members of the Epidemiology Department of the 1st Moscow Medical Institute to share experiences in teaching epidemiology and to project methods of improvement should find lively response among teachers in epidemiology departments at all the other higher institutes of the country since only cooperative discussion of the content and method of instruction will help to develop the most perfect standards and to unify instruction. In connection with this, we would like to share our experience of conducting training, mainly practical, in the Epidemiology Department of the Donets Medical Institute and to present for discussion several problems of a controversial nature.

In the Sanitary-Hygiene Faculty the study of epidemiology based on the new program in four semesters has somewhat widened the possibilities of preparing qualified epidemiologists, though not to the extent that would have been desired. The increase in the number of hours (by 52 hours) in comparison with the last training plan was accomplished primarily due to the inclusion of a new section of exercises on the indication of pathogenic microbes in the external medium (36 hours).

Lecture material on general epidemiology is expounded in the 9th semester. The reading of lectures on special epidemiology begins with the 10th semester. Hours from the 9th and 10th semesters ( $32 + 38 = 70$  hours) are allotted in the practical exercises for the study of general epidemiology. The students work through special epidemiology in the 11th semester (108 hours). Themes on military epidemiology are included in the course in all the semesters and follow the related themes in general and special epidemiology, for example, exercises on the sanitary processing of troops -- following the series of exercises on disinfection, etc. In the 12th semester the students go through industrial practice at bases of sanitary-epidemiological stations on all the disciplines of the hygiene cycle. Fifteen days (90 hours) are allotted to the study of epidemiology.

We give a great deal of attention to the logical sequence of studying the principles of the epidemic process, therefore on practical exercises the students initially cover themes devoted to the study of all the categories of sources of infection and the measures for rendering them harmless, then themes related to the study of the mechanism of transmission and measures for disrupting it, and finally, themes connected with the study of measures for creating specific non-susceptibility of the population.

The series of exercises for studying the sources of infection (12 hours) includes mastering the epidemiological role of patients, carriers and animals. Thus, for example, when studying the role of carriers, the students become acquainted in detail with the contingents applicable to the investigation on carriage, with existing instructional materials, with the order of selecting samples and carrying out laboratory analysis, and when studying animals -- with the species of animals having an epidemiological significance, particularly rodents, the taxonomy of rodents and individual representatives of this order. In the conclusion of each theme the students are acquainted with measures for rendering the corresponding category of source of infection harmless. The course of laboratory investigation during the exercises on infection carriage is carried out by the students on demonstration preparations (media, variegated and agglutination series, etc.), but independently, laboratory investigations are not performed: rodents are studied by using stuffed animals, charts and descriptions of their ecology and epidemiological importance which were made up by the department, etc. But a considerable part of the material is worked out in the form of seminars, the active interview of teacher with students, and in the form of solving epidemiological problems.

The cycle of exercises on mastering the mechanism of transmission encompasses eight hours, during which they study mainly the living carriers and methods for rendering them harmless. On the exercises the students recollect the classification of arthropods, determine the arthropods which have the most important epidemiological significance, and then study the main ones in more detail. In particular, they become acquainted with the morphology, ecology and cycle of development of flies, lice, mosquitoes, fleas, ticks, etc., the mechanism of infection, and the epidemiological peculiarities of the infections caused by them. The students examine preparations of arthropods; while the leader directs their attention to peculiarities of morphology which have an epidemiological significance, for example, the hairy covering of flies, their mouth structure, etc. But a considerable part of the material in this section is assimilated by the students in the process of active interview with the teacher.

The series of exercises on disinfection (12 hours) is equipped with chamber mock-ups, samples of disinfection equipment, collections of chemical disinfectants and charts. The students prepare several types of operational solutions of disinfectants. They become acquainted with operational chambers and the organization of disinfection when visiting disinfection stations.

Familiarization with prophylactic inoculations (12 hours) is conducted in the form of the step-by-step study of inoculative preparations. Preliminarily the students are acquainted with the comparative characteristics and principles for obtaining live, killed and chemical vaccines, etc. The exercises are equipped with sets of inoculative preparations and instruments. The students inoculate each other against smallpox. In conclusion they become acquainted with the organization of prophylactic inoculations and with report-accounting documentation.

Themes on special epidemiology are also presented with a consideration of the logical sequence of material, that is, initially there are exercises on the study of the epidemiology of intestinal infections, then infections of the respiratory tract, and finally, the remaining group of infections.

The section on intestinal infections begins with a series of exercises devoted to the study of helminthiases (12 hours). Then there are themes on the study of types of epidemics of typhoid fever, dysentery and toxin infections with the utilization of both the descriptions of epidemics published in literature as well as local materials. The students independently examine the foci of various intestinal infections with a subsequent review of them in student groups. In conclusion of this review, the measures are summed up for the struggle with and prophylaxis of the corresponding intestinal infection. Besides this, this series also includes exercises on compiling a plan for antiepidemic measures for intestinal infections on the basis of a familiarity with the concrete epidemiological situation in a typical region (this situation is described in the form of a conventional problem). The plan is drawn up by the entire student group with the help of the teacher.

When studying the group of infections of the respiratory tract, blood and external integuments in the compulsory sequence, exercises are conducted on the epidemiological investigation of foci of the corresponding infections and a study of the system of antiepidemic and prophylactic measures. The students independently draw up a plan of measures for dealing with exanthematous fever, after being oriented on the conditions of the problem. In this same semester they visit a number of institutions, where, in conjunction with the sanitary-epidemiological stations, antiepidemic measures are being carried out -- polyclinics for adults and children, establishments of the veterinary service, etc. The students become acquainted with the organization of antiepidemic service by visiting all the departments of the oblast and city sanitary-epidemiological stations.

We give great attention to the section of exercises on the epidemiological analysis of infectious morbidity (18-20 hours). Each student receives an assignment to conduct a thorough analysis of the morbidity of one of the infections in the region or city for one year and, stemming from the knowledge obtained in the process of studying the previous course and a

familiarity with the documentation of a sanitary-epidemiological station, to make this analysis. The original antiepidemic documentation of the station is used as the basic material. The forms of tables for statistical processing are suggested by the department; some of the tables are based on the form for the annual record of the station (situation review). The statistical record is supplemented by an epidemiological analysis, reflected in the text, and a number of illustrative materials -- diagrams, cartograms, etc. Thus, when compiling the report, the students have available, not artificially gathered, but actual material which permits them to actually evaluate the epidemiological situation in a concrete territory.

The section of exercises on the indications of pathogenic microbes was set up by us with consideration of the profile of the department, that is, only the epidemiological aspect of this theme is reflected, without a deep analysis of microbiological problems. On the exercises the students are acquainted with the purpose of indications, the forces and means for producing the latter, the organization of laboratories and the equipment necessary for them. Then in an area imitating a focus of bacteriological affection, samples are taken of air, water, soil, arthropods and animals. In the department auditoriums the students perform the initial processing of the material obtained and certain simple laboratory investigations directed mainly at speeding up the diagnosis of the causative agents in the focus of bacteriological affection. The stated section of exercises logically is not connected with themes on special epidemiology and therefore is conducted in the beginning or end of the cycle.

In the 12th semester for a period of 2½ weeks (90 hours) the students work on epidemiology in the epidemiology department of one of the regional or city sanitary-epidemiological stations of the oblast. They enter fully into the work of the department and carry it out in the position of secondary epidemiologists. One of the most important sections of the work is the compilation by each student of an epidemiological analysis of the morbidity of some one of the infections for a number of years (10). In carrying out this assignment the students utilize the experience from conducting an analogous exercise in the 11th semester. The results of the analysis are often so important and valuable that they compel practical epidemiologists to re-examine their views on a number of problems and consequently to change measures. Reports on the results of the analysis take shape in conferences between the students and the epidemiologists of the region or city. They have the nature of a debate and help very much in the formation of the attitude of the future epidemiologist. At the same time, these improvised conferences aid the formation of the correct opinions on the part of the operational epidemiologists, since a deep analysis over a number of previous years with the use of relative indices, unfortunately is performed not too often by epidemiologists.

In the medical and pediatric departments the exercises are conducted within the hours stipulated by the plan of the USSR Ministry of Public Health. For reasons which are not understood, according to this plan a different number of hours are assigned for the study of epidemiology in the pediatric and medical departments (72 and 60 respectively). Considering the limited number of hours stipulated for lectures (24 and 18 respectively) and practical exercises (48 and 42 respectively), we consider that it is primarily necessary to give the students the correct trend and methodology, that is, we give primary attention to general epidemiology, keeping in mind that problems of special epidemiology are worked out in the clinic for infectious diseases when studying the appropriate infections. The lecture course for the medical department is completely devoted to the study of general and military epidemiology; in the pediatric department, besides what was stated, further examples are expounded on the epidemiology of 2 or 3 infections which are important in the pediatrician's practice.

Practical exercises are mainly devoted to general epidemiology. They are conducted in the same sequence as in the sanitary-hygiene department. Naturally, the amount of hours devoted to the appropriate themes is considerably reduced. The specific character of the departments is reflected in the specificity of the selection of materials and examples. For example, when studying the theme "Infection carriers as sources of infection" in the pediatric department, the carriage of the causative agents of dysentery and diphtheria are analyzed primarily, in the medical department -- the causative agents of typhoid-paratyphoid diseases. Besides this, the students conduct epidemiological investigations of foci of intestinal infections and infections of the respiratory tracts with a subsequent critique in student groups and a generalization of the necessary antiepidemic measures.

In addition, practical exercises on helminthology are conducted with the students of the pediatric department.

The size of this journal article does not permit us to give a detailed account of instruction in the medical and pediatric department.

In conclusion we would like to dwell on several organizational-methodical problems of teaching and suggest a number of proposals.

1. We consider as completely necessary the systematic exchange of experience between epidemiology faculties of the country. This exchange may be carried out in the form of conferences of faculty teachers, conducted 2 or 3 times a year, visits between faculties, interexchange of teachers for a certain time, etc. For this, it is desirable to charge one of the capital departments with this arrangement. It will also be the head in this respect.

2. We consider it expedient to discuss the problem concerning the nature of industrial training in the 12th semester. Initially during the transition to 6-year instruction, the students in the 12th semester specialized in the selected specialty. Thus, the future epidemiologist was engaged with epidemiology for half a year, and not 15 days, as at present. It is not necessary to prove that such training makes it possible to graduate more qualified specialists. It is obvious that this form of specialization has been resolved in the 1st Moscow Medical Institute. It follows to generalize and disseminate their experience to all the institutes of the country.

3. The problem must also be considered of the advisability of conducting exercises on the indication of pathogenic microbes in the external medium in the epidemiology department. If they are conducted in the proper volume, then microbiology should be presented in them extensively. Considering the set up of both departments it is more rational to transfer these exercises to the microbiology department.

4. An important methodical problem is the nature of the practical exercises on epidemiology. A number of departments, in meeting established tradition according to which on the practical exercises the student should perform everything with his own hands, behave very carefully and even with caution toward seminar exercises, being afraid of the label "microlecture." From here comes the artificial incorporation of the content and methods of entomology, microbiology, etc. At times it is difficult to determine in which faculty the student is working -- biology, microbiology or epidemiology. The characteristics of the subject are castrated. It seems to us that epidemiology, having as the object of its study the epidemic process, that is, a process which under artificial laboratory conditions cannot be created, should at the practical exercises be concerned with problems relative to the epidemic process. And if many exercises bear the nature of live talks or discussions, then this does not discredit the idea of a practical exercise but only shows all the diversity of its form. As an example, in the political economy department no form other than the seminar form is demanded for carrying out an exercise.

5. It is necessary to have an examination of the problem concerning the number of hours on epidemiology in the medical and pediatric departments for the purpose of increasing them or at least bringing both departments up to 72 and separating the course of epidemiology from the faculty of infectious diseases into an independent subject.

6. The presently applied program in epidemiology for the medical and pediatric faculties is not found in any kind of conformity with the actual hours set aside, since it, with rare exceptions, is identical to the program for the sanitary-hygiene department. Thus, if the curriculum is to be followed, then in the 400 hour (sanitary-hygiene department) and in the 60-70 hour course (pediatric and medical faculty) it is necessary to present the same material.

The enumerated problems of an organizational and methodical nature require the most rapid resolution.